

*Meeting the  
wood supply  
challenge: The  
need for  
commercial  
forestry in  
Kenya*

Executive  
Summary of  
Discussion Paper



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# Glossary

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| <b>Arid and Semi-Arid Lands</b>              | Areas characterised by low erratic rainfall of up to 700mm per annum, periodic droughts. <sup>1</sup>   |
| <b>Business as Usual Scenario</b>            | The Scenario for Kenya's commercial forestry sector if the industry follows its 'Business as Usual' trends, i.e. current levels of investment from 2014 to 2030.  |
| <b>Clear-fell harvest</b>                    | The removal of all trees from an area chosen for harvesting.  |
| <b>Climate change adaptation</b>             | Anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. <sup>2</sup>  |
| <b>Climate change mitigation</b>             | Efforts to reduce or prevent emission of greenhouse gases. <sup>3</sup>   |
| <b>Commercial forestry</b>                   | Commercial forestry aims to maximise the production of timber, fuel wood and other forest products from a given area of land for revenue.   |
| <b>Community Forest Associations</b>         | These associations are established with the aim of co-managing forest resources with central and local government institutions such as the Kenya Forest Service (KFS) and County Governments. In order for the local communities to enter into such co-management arrangements, they are legally expected to form and register Community Forest Associations (CFAs). <sup>4</sup>     |
| <b>County Governments</b>                    | County Governments are responsible for functions assigned to them by the Constitution of Kenya, including the implementation of specific government policies on natural resources such as forestry. <sup>5</sup>  |
| <b>Green Growth</b>                          | Green Growth means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. <sup>6</sup>   |
| <b>Gross Domestic Product</b>                | GDP measures the monetary value of final goods and services – that is, those that are bought by the final user – produced in a country in a given period of time. <sup>7</sup>  |
| <b>Gross Domestic Product at Factor Cost</b> | Gross domestic product at factor cost is the value at factor cost of the product, before deduction of provisions for the consumption of fixed capital, attributable to factor services rendered to resident producers of the given country. It differs from the gross domestic product at market prices by the exclusion of the excess of indirect taxes over subsidies. <sup>8</sup> |
| <b>Gross Value Added</b>                     | The total value of goods and services produced by a sector or industry in the economy.  |
| <b>Growth Scenario</b>                       | A scenario whereby Kenya's commercial forestry sector grows at a significantly higher rate than the current business as usual scenario between 2014 and 2030.   |
| <b>Input-Output Table</b>                    | An input-output table is a means of presenting a detailed analysis of the process of production and the use of goods and services (products) and the income generated in that production. <sup>9</sup>  |
| <b>Kenya's Vision 2030</b>                   | The Kenya Vision 2030 is the national long-term development blueprint that aims to transform Kenya into a newly industrialising, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. <sup>10</sup>  |
| <b>Mean Annual Increment (MAI)</b>           | The growth rate, i.e. the total biomass produced by a tree or stand (standing crop plus thinnings) up to a given age divided by that age. <sup>11</sup>   |

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| <b>Plantation Establishment and Livelihood Improvement Scheme (PELIS)</b> | A system whereby farmers grow both plantation trees and food crops on small plots, tending the trees planted and harvesting the crops once the trees have become established. <sup>12</sup>                      |
| <b>Rotation length</b>  | The time between establishing a stand of trees and the final harvest of that stand.  |
| <b>Silviculture</b>   | Silviculture is the process of tending, harvesting and regenerating a forest.  |
| <b>Thinning</b>   | Thinning is a silvicultural operation where the main objective is to reduce the density of trees in a stand, improve the quality and growth of the remaining trees and produce a saleable product. <sup>13</sup> |

# *Executive Summary*

The purpose of this discussion document is to inform the current debate about the future direction of Kenya's forestry sector. This is an assessment based on the data sources and analysis outlined in the Technical Appendix and intends to promote discussion. As it is based on a series of assumptions further work would be needed to assist the decision making process. PwC have written this report with funding support from the Gatsby Charitable Foundation, who also facilitated access to key stakeholders and information during the research process.

In this report we present a set of quantitative analyses to highlight the potential role commercial forestry can play in addressing Kenya's existing wood supply deficit, alleviating pressure on natural forests, and supporting Kenya's Vision 2030 and Green Growth objectives. We then provide recommendations for the development of a new Forest Policy and legislative framework, and to inform government, private sector, and development partner interventions.

## *A diverse forestry sector provides a wide range of benefits to Kenya*

Kenya's forest sector includes montane forests (commonly referred to as the Water Towers); additional forests such as coastal forests and mangroves; dry-land forests and woodland; and plantation forests (both public and private). Collectively these resources provide a wide range of goods and services, known as ecosystem services, which support the economic performance of the country. It has been estimated that Kenya's Water Towers regulate 75% of the country's renewable water resources, and in doing so underpin a number of economic sectors including agriculture, fisheries, forestry, electricity, water, hotels and accommodation, public administration and defence. In addition these forests are home to indigenous communities such as the Ogieks (Mau Forest) and Sengwers (Embobut Forest) and have been shown to provide additional services including soil erosion prevention and disease prevention, while providing a habitat for many endemic species. Biomass harvested from forests and on-farm tree-growing generates 80% of Kenya's overall energy requirements.<sup>14</sup> At the same time, industrial wood products are essential to support the demands of an increasingly industrialising economy and their value chains already employ many hundreds of thousands of workers. Finally, forestry also supports crucial climate mitigation and adaptation functions at both national and international level.

## *Kenya faces a growing wood supply deficit with negative consequences*

Kenya currently faces an annual wood supply deficit of 12 million M<sup>3</sup>.<sup>15</sup> With demand predicted to grow to approximately 66 million M<sup>3</sup> by 2030, and sustainable supply increasing only marginally in a 'business as usual scenario', this deficit is predicted to increase to 34.4 million M<sup>3</sup> by 2030.<sup>16</sup>

This has a number of negative implications. From an environmental perspective, the growing imbalance in demand and supply will lead to increasing degradation pressure on remaining forest resources, putting increasing strain on conservation efforts. Supplying an annual deficit of 34.4 million M<sup>3</sup> is equivalent to clear felling 708,333 hectares of dry-land woodland each year.<sup>17</sup>

From a social perspective, the shortage of wood-fuel will likely result in increasing prices for charcoal. Kenya has already seen inflation adjusted prices for this commodity rise by over 70% from 2005-2013 with negative repercussions on welfare, especially among the urban poor.<sup>18</sup> A growing wood supply deficit would increase the upward pressure on charcoal prices and hence would have likely damaging consequences on livelihoods, especially in urban and peri-urban areas.

A growing deficit could also have negative consequences for Kenya's economy. The Kenya Forest Service (KFS) estimate that deforestation in 2010 deprived Kenya's economy of 5.8 billion shillings, far outstripping the roughly 1.3 billion shillings provided from officially regulated forestry and logging each year. In 2012 international trade data shows that Kenya recorded a trade deficit of USD38 million for forest products. The widening wood supply deficit will only serve to exacerbate this problem.<sup>19</sup>

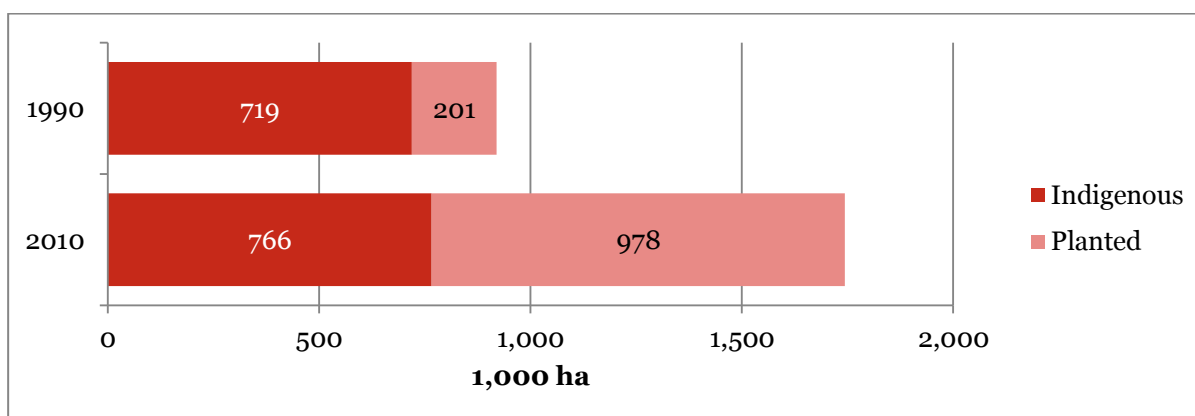
### **Tackling the deficit requires large investments and a strong commercial focus**

Overall indigenous forest classes (i.e. indigenous forests and dry-land woodlands) form 93.5% of Kenya's forest resources by area.<sup>20</sup> These areas provide significant ecosystem service functions to the country, and are rich in biodiversity as well as having cultural significance. However, indigenous forests are comparatively less productive in terms of sustainable wood yield per hectare. **Hence, while indigenous forests are absolutely essential for the delivery of Kenya's ecosystem services, planted forests also have a critical role to play in providing a sufficient supply of wood to meet the demands of its growing economy.**

Planted forest areas (i.e. government plantations plus private plantations forests) make up only 6.5% of forest resources by area.<sup>21</sup> These areas make a relatively lower contribution in terms of ecosystem service delivery than indigenous forest classes. But planted forests are considerably more productive in terms of sustainable yield of wood per hectare. For example, on a per hectare basis, plantation forests can produce a sustainable yield equivalent to 170-217 times that of dry-land woodland.<sup>22</sup> Expanding the planted forest resource base in Kenya therefore represents an important aspect of an effective conservation strategy for Kenya's remaining indigenous forests, by helping to secure a much greater local sustainable production of wood.

A successful example of where this strategy has been implemented at a national scale is Uruguay. A new forestry law was passed in 1987, which provided an enabling environment for scaled private commercial growing. As a result the country was able to move from a wood supply deficit to a surplus, increase indigenous forest area and surpass a total forest cover target of 10% by 2010. This provided jobs, export earnings, and attracted significant inward investment. At the peak of this expansion, Uruguay was able to achieve approximately 70,000 hectares of commercial plantation establishment each year.

**Figure 1: Indigenous versus planted forest in Uruguay - 1990 and 2010.**



**Source: FAO (2010). Global Forest Resources Assessment.**

Adopting a similar expansion of plantation forest resources in Kenya is likely to require the majority of forest establishment to be delivered by the private sector, given the limited geographical area of existing government

gazetted plantation forests in the country (approx. 137,000 ha total<sup>23</sup>), as well as the huge scale of investment required to establish plantations at a scale in the region of 70,000 hectares a year.

## ***Such investments in commercial forestry will have far-reaching impacts***

The potential impacts of scaling up commercial forestry activities go far beyond meeting wood product demand. They include value added to the economy, employment and income growth, tax revenue, community cohesion, poverty alleviation, and increases in national carbon mitigation. Specifically, investments in commercial forestry could provide a huge boost to Kenya's Green Growth agenda and climate change mitigation efforts. Assuming an annual rate of 70,000 hectares of private commercial forests being established every year up to 2030 across both high potential and arid or semi-arid land (ASAL) areas, our results indicate this could lead to the following impacts:

### **Summary of potential impacts from an expanded commercial forestry sector compared to 'Business as Usual' by 2030**

- A doubling in the sector's contribution to GDP from 1.2% to 2.4%
- A doubling in the number of jobs in the sector to over 2 million people
- A tripling of rural income from the sector from 21.4 KSH billion to 71 KSH billion
- 50% growth in direct tax revenue from 504 KSH million to 778 KSH million
- Kenya's national carbon emissions reduced by 50%

**Source:** PwC analysis based on data from the sources referenced in the endnotes to Table 1 in the full report.

These results demonstrate the potential contribution an expanded commercial forestry sector, underpinned by private commercial tree-growing could make to realising Kenya's Green Growth objectives.

## ***Bringing in the needed private investment requires concerted government action***

Designing Kenya's forest policy and legislation to provide an enabling environment for scaled private commercial growing is needed if this opportunity is to be realised. This includes clear recognition of the role of commercial forestry as a distinct sub-sector, and importantly a distinction between the different private sector players that form the sector. These are composed of input providers (i.e. nurseries); tree growers of micro, small, medium and large scale (i.e. producers); and wood-manufacturers and processors. Making these distinctions will be necessary to underpin the design and implementation of the necessary incentives and governance structures required to catalyse an effective, efficient and inclusive commercial forestry sector.

Critical barriers currently holding back the sector's development from a grower's perspective include: lack of guidelines on best practice silviculture and environmental safe-guards, lack of organisation and capacity of growers to understand and access markets effectively, and lack of access to high quality inputs which can improve the economic returns of tree-growing. From a processor's perspective, gains can be made through adoption of improved technologies, and better relationships with producers. Addressing these barriers will require effective private-public partnership in developing a set of institutions that can sustainably service the sector's needs.

Finally government at both National and County level have critical roles to play in anchoring inward investments into the sector. For example using existing government assets to attract new large-scale private sector investments in commercial tree-growing and in forest industries could provide a significant catalytic boost to the sector. This might include allocating concessions for commercial tree-growing on government

gazetted forest land or it could involve seeking to bring in new investors into the pulp and paper plant which stopped production in recent years.

At a local level County Governments could facilitate investors to access land in currently unproductive marginal areas, providing they meet minimum requirements for environmental and social safeguards, value addition and employment creation.

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## Endnotes

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- <sup>12</sup> Ministry of Forestry and Wildlife of Kenya (2009). *Miti Mingi Maisha Bora – Support to Forest Sector Reform in Kenya*.
- <sup>13</sup> The Forestry Commission (2011). *Thinning Practice: A Silvicultural Guide*.
- <sup>14</sup> SNV (2011). *Renewable Energy*. Available online: [http://www.snvworld.org/sites/www.snvworld.org/files/publications/snv\\_kenya\\_renewable\\_energy\\_factsheet\\_jan\\_2012.pdf](http://www.snvworld.org/sites/www.snvworld.org/files/publications/snv_kenya_renewable_energy_factsheet_jan_2012.pdf) (Last accessed 30th April 2014).
- <sup>15</sup> PwC analysis using data from UNEP (2012). *The Role of Forest for the Kenyan Economy*. (Table 26, P.50); National Environment Management Authority (NEMA), Kenya (2010). *State of the Environment and Outlook 2010: Supporting the Delivery of Vision 2030*. (Chapter 5, P.86); The World Bank (2014). *Data: Annual Population Growth %*.; KFS (2009). *Strategic Plan 2009/10-2013/14*. (Table 5, p.27).
- <sup>16</sup> Ibid.
- <sup>17</sup> Calculated on the assumption Kenya dry-land forest contain an average of 48t per hectare dry biomass as per IPCC (2003) ANNEX 3A.1 Biomass Default Tables for Section 3.2 Forest Land. (Table 3A.4).
- <sup>18</sup> Kenya National Bureau of Statistics (2014).
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- <sup>22</sup> PwC analysis based on data from FAO (2003). *Forest Outlook studies in Africa: Kenya*; EC-FAO Partnership Programme (2000). *Kenya's Forest Resource Assessment*.
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